panel "***prevents distortion of the panel by the recovery forces of the sleeve***". Thus, the foil layer is not heat shrinkable but, rather, a reinforcement of the sleeve.

During the interview of June 21, 2001, the examiners asserted that there was "no difference" between the colored splice tape of the prior art specimen (Exhibit A) and the splice tape of the invention sample (Exhibit B) because both tapes comprised a "heat shrinkable" material. (See Interview Summary.) The examiners also took the position that the term "heat shrinkable" in the claims was not capable of distinguishing the invention over the prior art in any article claim. In support, the examiners asserted that "***all polymer materials will inherently shrink to some extent when heated***. In rebuttal, it was noted that the term "heat shrinkable" distinguishes the invention over the prior art because the term identifies a well recognized category of materials that have been processed in a particular manner to possess particular characteristics. Contrary to the examiners' position, these characteristics are not inherently possessed by all polymer materials.

Caponigro, for example, distinguishes between polymer materials in general (for panel 13) and polymer materials that are "heat shrinkable" materials (for sleeve 11) in the following manner.

> A polymeric heat-recoverable material is a dimensionally heat unstable material frequently said to possess "elastic memory". Sheet material that will exhibit this phenomenon can be obtained by ***heating a*** sheet of a suitable crosslinked thermoplastic ***polymer above its crystalline melting point and elongating or expanding*** it in one or more directions followed by allowing the sheet ***to cool*** below the crystalline melting temperature ***while in its deformed condition***. Once cooled, the sheet will retain its new dimensions. However, if once again heated, but without restraint, to a temperature above the crystalline melting point of the polymer the sheet will recover its original dimensions thereby exhibiting its elastic memory. ... ***In its heat-unstable elongated form, the sheet material is said to be heat-recoverable or heat-shrinkable***. (Caponigro, Col. 3, lines 12-29); emphasis added.)

Attached hereto, as Exhibit C, is a technical dictionary definition evidencing that the term "heat shrinkable" is recognized in the art. A "heat-shrinkable film" is

> a film that is stretched and oriented while it is being cooled so that later, when used in packaging, it will, upon being rewarmed, shrink tightly around the package contents. (Whittington's Dictionary of Plastics, 3d. Edition, 1993 by Technomic Publishing Company, Inc., pg. 235).

Attached hereto as Exhibit D, is a copy of pages 281-288 of Plastic Films, Third Edition, J. H. Briston and Dr. L. L. Katan, as published in 1988 by The Plastics and Rubber Institute. This treatise evidences equivalence between the terms "shrink wrapping" and "heat shrinkable films" (see page 281). The process of forming "heat shrinkable films" ("shrink wrapping") is described on pages 281-282 in the following manner.

> The principle on which shrink wrapping is based is sometimes referred to as 'plastic memory'. In other words a film which has been ***stretched*** during manufacture (***at a temperature*** above its softening point) and ***then cooled*** to 'freeze-in' the consequent orientation of the molecules, will tend to return to its unstretched dimensions when re-heated. (emphasis added.)

Further recognition in the art that the term "heat shrinkable" identifies a material formed according to the above-described process is highlighted on page 286 of this Exhibit by the inclusion of the heading **"PROPERTIES OF HEAT SHRINKABLE FILMS"**.

Attached hereto as Exhibit E, is a copy of pages 15-29 of Plastic Films For Packaging, Calvin J. Benning, publish in 1983 by Technomic Publishing Company, Inc. This treatise again evidences the equivalence between the terms "heat shrinkable film" and "shrink wrapping" (see page 16 and page 21). The process of forming "heat shrinkable film" ("shrink wrapping") is described on page 20 in the following manner.

> The orientation procedure for crystalline polymers has the following sequence: (1.) Heat the polymer to above the melting point to destroy crystallinity (e.g. melt extrude). (2.) Quench to minimize crystallinity and preserve the amorphous condition. (This will facilitate subsequent orientation.) (3.) Reheat and ***orient by stretching at a temperature somewhat above the second order transition temperature*** but below the crystalline melting point. (4.) Aneal (if desired) to reduce thermal shrinkage or ***rapidly quench to "freeze in" shrink***

> ***energy. For this step the film is constrained from shrinkage during heat treatment***. (Emphasis added).

Recognition in the relevant art of the term "heat shrinkable" is also evidenced by *In re De Blauwe et al.*, 736 F 2d 699, 222 USPQ 191 (Fed. Cir. 1984), [Exhibit F], in which the Federal Circuit reviewed a finding of obviousness of claims directed to "***heat shrinkable***" articles. The court stated that "***heat shrinkable articles [are] well known*** in the art" and are typically made by

> (1) melt-shaping a polymeric material into an article having an original shape, (2) cross-linking the shaped article, (3) ***heating*** the cross-linked article ***above the melting temperature*** of the polymeric material, (4) ***expanding*** the heated article into a new shape, and (5) ***cooling*** the article ***while maintaining*** its expanded new ***shape***. (Id., 736 F2d at 700, 222 USPQ at 192); emphasis added.)

The specific definition of the term "heat shrinkable" is also evidenced in numerous patents. Each of the following references has a filing date prior to the April 23, 1998 filing date for the parent application.

> U.S. Pat. No. 5,904,964 states as follows at column 1, lines 20-26:
>
> ***Heat shrinkable*** polymer film is typically made by extruding polymer from a melt into a film, followed by ***orienting the film by stretching it*** under temperature conditions where molecular orientation of the film occurs and the film does not tear. The film is then ***cooled in the stretched state***, and upon subsequent heating, the film shrinks in seeking to cover (sic.) its original dimensional state. (Emphasis added.)

> U.S. Pat. No. 5,788,898 states as follows at column 1, lines 16-24:
>
> Polyolefine ***heat shrinkable*** films, in particular, ***heat shrinkable*** films mainly comprising propylene copolymer (hereinafter referred to as "polypropylene heat shrinkable films) have been used generally as heat shrinkable films in the field of packaging. [They] are ***prepared from starting materials mainly of polypropylene or ethylene-propylene copolymer and, in addition, subjected to biaxial stretching*** by a so-called dry heating method such as infrared heating or hot blow heating. (Emphasis added.)

U.S. Pat. No. 5,709,599 states as follows at column 1, lines 20-33:

> It is known to provide ***heat-shrinkable*** tubular film material … [that] involves the steps of ***expanding*** a bubble of the film material, while ***at its orientation temperature***, and then rapidly ***chilling*** the material in that expanded form ***to "freeze" the memory*** of its original configuration into the crystalline structure of the film. (Emphasis added.)

U.S. Pat. No. 5,691,043 states as follows at column 1, lines 36-50:

> The manufacture of shrink films …[involves] orientation processes which cause the film to be ***stretched*** in the cross or transverse direction and in the longitudinal or machine direction. The films are usually heated to their ***orientation temperature range*** which varies with different polymers but is usually above room temperature and below the polymer's melting temperature. After being stretched, the film is rapidly ***cooled to quench it thus freezing*** the molecules of film in their oriented state. Upon heating, the orientation stresses are relaxed and the film will begin to shrink back to its original, unoriented dimension. (Emphasis added.)

U.S. Pat. No. 5,614,315 states as follows at column 1, lines 18-31:

> A ***heat-shrinkable*** film in a tubular form is generally produced by a process in which a thermoplastic resin melt is extruded through a die to form a tubular preform, the preform being rapidly cooled with water, then reheated to a ***temperature*** lower than the melting point thereof but ***higher than the softening point*** or glass transition point thereof ***and stretched*** by a blown bubble method. The resulting biaxially oriented film when heated ***shows a property to return*** to the original dimensions. The characteristics of the heat-shrinkable film, therefore, ***depend not only upon the physical properties*** of the raw material thermoplastic resins ***but also upon stretching*** conditions such as the stretching temperature and the drawing ratio. (Emphasis added.)

U.S. Pat. No. 5,604,043 states as follows at column 5, lines 31-37:

> The term "***oriented***" is used herein interchangeably with the term "***heat shrinkable***," these terms designating a material which has been ***stretched*** and ***set by cooling while substantially retaining its stretched dimensions***. An oriented

(i.e. heat shrinkable) material will tend to return to its original unstretched (unextended) dimensions when heated to an appropriate elevated temperature. (Emphasis added.)

Recognition of term "heat shrinkable" in the art is also evidenced by a recently issued U.S. Pat. No. 6,291,043, which states as follows at col. 1, lines 10-22:

> ***Shape-recovering material, sometimes also called heat-shrinkable material,*** is widely used in marking and packaging applications. A working definition used herein is that the shape-recovering material ***is a polymer having materials properties described by a recovered state and an expanded state which contracts toward the recovered state upon heating.*** When the shape-recovering material is provided in tube form, it is typically structured to contract to or toward a specified size in the recovered state. In its initial manufacturing, the shape-recovering material is ***typically extruded in a particular shape and size, expanded to the expanded state, and thereafter cooled*** so that the expanded state is retained. (Emphasis added.)

In addition to this "heat shrinkable" term being well defined in the art, it is properly used to distinguish an article claim, as in, for example, U.S. Pat. Nos. 6,064,000; 5,832,162; 5,922,154; and 5,809,674. In each of these patents the term "heat shrinkable" appears, without any further definitional support, in an independent claim.

The term "heat shrinkable" is also found in the dependent claims of U.S. Pat. Nos. 6,296,129 and 5,876,376. The sole point of distinction for these dependent claims is the requirement that an element recited within the base claim is "heat shrinkable".

It is clear that the term "heat shrinkable" is well recognized in the art as identifying a particular category of materials that are defined by a particular process. The evidence presented herein rebuts the assertion that all polymer materials are inherently "heat shrinkable". Further, the term "heat shrinkable" can function, without further definitional support of the term in the claim, to distinguish an element of an article claim.

The term "heat shrinkable" in the claims of the present application distinguishes the splice tape of the present invention over a non-heat shrinkable splice tape, such as that of the prior art container exhibited to the examiners (Exhibit A). Also, the reinforced panel of Caponigro fails to teach the use of a heat shrinkable splice and in fact teaches away from applicants' claimed invention.

The prior rejection of the claims should be withdrawn. The claims as presented herein are in condition for allowance.

Respectfully submitted,

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